LONG ISLAND BIOLOGICAL ASSOCIATION
COLD SPRING HARBOR, NEW YORK

THE BIOLOGICAL LABORATORY

5 May. 1955

Dr. Joshua Lederberg
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Dear Josh,

Thanks very much for sending the Hfr cultures so quickly. I'm finally returning the acknowledgment of receipt. I tried to cross W2323 (Hayes' Hfr) with W1177 upon receipt and got nothing. I haven't looked at it since, so I have no idea what the difficulty is. The fault is probably mine somewhere and I'll try to check more fully later, but thought the incident worth mentioning.

The tracer experiments have gone quite well and are consistent with a unilaterally biassed flow of DNA from Hfr to F-. We would like now to make some estimate of the fraction of parental DNA involved. This depends, among other things, on a reliable estimate of the number of zygotes formed under our conditions. We have data on this, but there are some peculiar aspects of the situation that we would like to discuss with you, particularly with reference to what you find in dissected clones. Since you will be in NYC on May 19, I believe, we wondered if you could come out to Cold Spring Harbor for at least half a day ~~during~~ at this time. Norton has said that he would be glad to drive you out here and back to the city. Linda and I will be glad to feed you and Esther, and arrangements can be made if you are able to stay overnight. Hershey is quite interested in the problem and would like to sit in on discussions.

If you cannot make the trip, Alan and I could come into NYC if you will have any time to discuss things there. If neither arrangement works out we'll send you a summary of our difficulties by mail as soon as possible.

In anticipation, here is a brief presentation of the most troublesome situation. Hfr V_2^r V_7^s lac+ M- is crossed with F- V_2^s V_7^r lac- TLB_1- at a low Hfr:F- multiplicity, 0.3 or less. The Hfr is hot. The F- and zygotes are lysed with T2 and radioactivity in T2 measured and compared with total Hfr radioactivity. An aliquot of the same cross is treated with T6, lysing Hfr but sparing F- and zygotes, and plated on EMB-lac. The number of colonies sectoring for lac is a minimal estimate of zygotes formed. This ~~indicates that at least 25% of~~ the Hfr contribute to zygotes. This does not do justice to the experiment, since several obvious difficulties are not mentioned; but it is sufficient to show that one difficulty is in knowing how many zygotes are not detected. On an (--E---lac----L---T) map, L+ recombinants should be more common than lac+, but they do not seem to be. Most recombination of other markers is concentrated in lac sectored colonies, and only about 40% of sectored colonies contain L+. If this does not involve an artefact, it should be paralleled in your single cell studies by a high incorporation of lac+ as opposed to L+. Incidentally, the sectors are not papillae, and do not appear in F- x F-.

I hope we will see you in two weeks.

Sincerely,

Dave

Dave Skaar